



Cross-Cutting Fundamental Strategy
FY 2013 Action Plan Annual Progress Report
Strategy 3: Advancing Science, Research, and Technological Innovation

Advance a rigorous basic and applied science research and development agenda that informs, enables, empowers and delivers innovative and sustainable solutions to environmental problems. Provide relevant and robust scientific data and findings to support the Agency's policy and decision-making needs.

Executive Summary

Over the past few years, EPA has made remarkable progress towards integrated transdisciplinary research that takes a systems approach to sustainability. The Strategic Research Action Plans for the Agency's six new integrated research programs are important tools for communicating this new approach. In FY 2013, EPA established an Executive Management Council committee to focus on sustainability. This group promoted workshops on Next Generation Air Monitoring (NGAM), developed new analytical tools, and increased communication and sharing of best practices and new tools/approaches.

Accomplishments:

- ✓ EPA established an Executive Management Council committee to coordinate the integration of sustainability principles into EPA's programs and policies.
- ✓ Region 6 and the Office of Research and Development (ORD) conducted a workshop on [Next Generation Air Monitoring](#) (NGAM) to foster interaction between EPA's regional and headquarters offices and collaboratively inform and stimulate concepts in low-cost, highly-portable sensors for use by citizens, community groups, schools, researchers, government agencies, and industries.
- ✓ The draft [EPA Roadmap for NGAM](#) was released for review in March 2013. Continued NGAM work in FY 2013 included: the Open Source Challenges (e.g., [My Air My Health](#)); the Air Pollutions Apps and Sensors Workshop in Research Triangle Park, North Carolina; the Fence Line/Source Perimeter Monitoring initiative, a collaborative effort with EPA's Office of Enforcement and Compliance Assurance to develop and evaluate fenceline and mobile monitoring capabilities for use in emissions characterization and enforcement and compliance activities; and the first public pilot launch of the [Village Green Project](#), a community-based monitoring system built into a park bench platform using solar power with wireless streaming data.
- ✓ EPA prepared [Sustainability Analytics](#) for online release. Sustainability Analytics is a collection of science-based tools and approaches available to support more sustainable decisions. It does not dictate a process or policy for implementing sustainability, nor is it meant to be a comprehensive list of all assessment tools or approaches. It is a collection of existing tools and is meant to be a starting point for discussions on how to better understand the relationships among the three pillars of Sustainability: environment, society, and economy
- ✓ ORD models, methods, tools, and, databases were reviewed for relevance to EPA research efforts and were posted to EPA's website at <http://www.epa.gov/research/mmttd/>.

Challenges:

- ✓ Advancing science, research, and technological innovation in a time of declining resources and a reduced scientific workforce is a major challenge for both planning and managing the sustainability of our existing workforce. EPA is utilizing the ORD Workforce Enhancement Project and senior ORD leaders to identify opportunities to streamline programs and identify ways to mitigate resource limitations.
- ✓ Lack of Agency resources in the areas of buildings and facilities, repairs and improvements, capital equipment, utilities, and maintenance are presenting challenges to EPA's network of laboratories. EPA is exploring business process improvements to help meet these challenges.

FY 2013 Performance Summary
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FY 2013 Action Plan Activity	Status/Explanation ✓ = Activity Complete
Integrating Sustainability into EPA Policies and Programs	
1. Sustainable approaches consider economic, environmental, and societal factors over the long term and can be effective in dealing with complex, multi-media environmental problems. For this reason, EPA strives to integrate sustainability more fully into its policies and programs. Whenever possible, EPA will integrate the principles of sustainability in our science, research, and technology to enhance our effectiveness in fulfilling our mission (<i>Supports Principle 4</i>).	
<ul style="list-style-type: none"> Integrating Sustainability Principles into EPA: In FY 2013, EPA will establish a committee under the EPA Executive Management Council (EMC) to coordinate how to integrate sustainability principles into EPA's programs and policies and develop an implementation plan by June 30, 2013. In addition, the committee will work in collaboration with the Office of the Chief Financial Officer and Strategic Plan Core Team to provide early input and develop specific recommendations by March 2013 for integrating sustainability into the <i>EPA FY 2014-2018 Strategic Plan</i> development. 	<p style="text-align: center;">✓</p> <p>The EMC Sustainability Committee was established in December 2012. Sustainability is a new Cross-Agency Strategy in the draft <i>FY 2014-2018 EPA Strategic Plan</i>.</p>
<ul style="list-style-type: none"> The Office of Research and Development (ORD) will complete and release a report featuring methods and tools for analyzing sustainability issues. This report will help Agency employees and others better integrate sustainability into their decisions, thus allowing the Agency to more effectively protect human health and the environment and to better promote sustainable solutions. 	<p style="text-align: center;">✓</p> <p>EPA initiated the Sustainability Analytics website which provides existing science-based tools and approaches for integrating sustainability into environmental decision making.</p>

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<ul style="list-style-type: none"> • ORD's Nitrogen and Co-Pollutant Science Integration (ORD, the Office of Water (OW), the Office of Air and Radiation (OAR), and the Regions) are developing an integrated, systems-based approach to reactive nitrogen and co-pollutant management. The goal of this "EPA Nitrogen Research Roadmap" is to protect human health and public welfare, along with ecosystem health, through the restoration of air and water quality. EPA intends to accomplish this by integrating Agency research to inform decisions and policies that impact the regulation or management of nitrogen and co-pollutants. The Nitrogen Roadmap will create a path for unifying and integrating EPA efforts across multiple media and temporal and spatial scales in an economically efficient, socially acceptable, and environmentally sound manner. Demonstrations of this effort are anticipated in the Narragansett Bay Watershed, the Mississippi-Atchafalaya River Basin, and the Northern Gulf of Mexico. EPA will finalize the Nitrogen Research Roadmap by August 2013. o EPA will complete additions to EnviroAtlas, including atmospheric modeling inputs (using the Community Multiscale Air Quality Model), data from the national nitrogen inventory, and modeling inputs of crop nutrient requirements (using the Environmental Policy Integrated Climate Model) by September 2013. 	<p style="text-align: center;">✓</p> <p>The Nitrogen and Co-Pollutant Roadmap Implementation Plan was completed. Work to finalize the roadmap is ongoing.</p> <p>EPA completed additions to EnviroAtlas.</p>
Promoting Innovative Science and Technologies	
<p>2. In FY 2012, EPA issued its Roadmap, Technology Innovation for Environmental and Economic Progress. This document reflects the Agency's commitment to innovative, cost-effective, sustainable approaches to protect public health and the environment while also promoting economic growth. The Roadmap also highlights the need for EPA to engage the private sector and the investor community to catalyze technology innovation and deployment (<i>Supports Principles 1, 2, 3, and 4</i>).</p>	

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<ul style="list-style-type: none"> Technology Network: A cross-agency Technology Innovation Network now serves in a central role for sharing and operationalizing technology innovation. Under its workplan, the Network will: (1) identify actions to catalyze innovation by surveying at least four initial pilot areas (biodigesters and biogas, air sensors, the energy efficiency/wastewater treatment nexus, and the automotive supply chain); (2) develop an internal system to better share EPA-related technology projects and activities; (3) draft and begin to implement an external communications strategy; and (4) publicize a list of market opportunities to promote private sector investment. 	<p>The Technology Innovation Network has partially completed the actions identified in the FY 2013 Action Plan including surveying four initial pilot areas and developing an internal system to more effectively share EPA-related technology projects and activities.</p> <p>The draft external communications strategy and draft list of market opportunities to promote private sector investment are waiting further vetting by senior leadership before they are finalized.</p>
<ul style="list-style-type: none"> Targeted Stakeholder Engagement: Identify opportunities to facilitate stakeholder collaboration to accelerate the development and adoption of technologies to achieve both environmental protection and economic growth. These opportunities will emerge throughout the year. For example, the May 2012 Technology Market Summit featured three environmental area case studies, where technology and innovation can accelerate solutions and promote new cost-effective approaches to environmental protection, while also improving the economy and creating jobs. In early FY 2013, these areas were identified as pilot areas for both the new agency-wide Technology Innovation Network established under EPA's Technology Roadmap, as well as a newly formed public-private partnership on Technology Innovation and the Environment that EPA joined in December 2012, adding greater visibility and more focused attention to environmental technology innovation and deployment. 	<p style="text-align: center;">✓</p> <p>Several of the Summit participants established a new Partnership on Technology Innovation and the Environment. The Partnership is a non-binding, non-legal, voluntary collaborative committed to accelerating the development, adoption, deployment, and export of technologies that protect human health and the environment while growing the U.S. economy. The partnership creates a forum for:</p> <ul style="list-style-type: none"> • Pre-competitive technical information exchange among experts to discuss research, development, and deployment needs, development of joint goals and roadmaps, and evaluation of progress; • Analyses and evaluations of approaches to address institutional, policy and financial barriers that inhibit innovation, development, deployment, commercialization, and export of environment-friendly technologies; and, • Development of consensus recommendations for going forward. <p>EPA's former Chief Financial Officer, Barbara J. Bennett, signed the partnership agreement on behalf of the Agency on November 29, 2012.</p>

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<ul style="list-style-type: none"> • Confluence, the Water Technology Innovation Cluster: Confluence is a public-private partnership working to catalyze water technology commercialization and economic development in the greater Cincinnati-Dayton, Ohio, Northern Kentucky, and Southeast Indiana regions. Lead federal partners include EPA and the Small Business Administration (SBA). In FY 2013, ORD will continue to conduct research and develop technologies within its Safe and Sustainable Water Research (SSWR) Program in support of Confluence as a global water technology innovation hub. ORD will also share the results of its Small Business Innovation Research solicitation and awards with stakeholders in the region. ○ In FY 2013, as part of SSWR, the Agency will award a contract for a Small Drinking Water Systems Ultraviolet Technologies Demonstration Study. This will also serve as a pilot of Confluence's tri-state technology adoption cooperation agreement in Ohio, Kentucky and Indiana. Concurrently, ORD's National Center for Environmental Research (NCER) has released a competitive national solicitation for Innovative Water Treatment Technologies for Small Utilities to further fulfill Agency commitments to the cluster. 	<p style="text-align: center;">✓</p> <p>The Agency awarded a contract for a Small Drinking Water Systems Ultraviolet Technologies Demonstration Study. This research is piloting Confluence's tri-state technology adoption cooperation agreement in Ohio, Kentucky, and Indiana.</p> <p>NCER is currently evaluating proposals for a Center for Innovative Water Treatment Technologies for Small Water Systems to fulfill Agency commitments to the cluster effort.</p> <p>The Cincinnati water research effort highlighted its 100-year history through a number of workshops and events. Over ten regional events were held on topics including citizen science, intellectual property protection, environmental technology export and small drinking water systems, attracting over 2,000 participants.</p>

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<ul style="list-style-type: none"> • Clean Air Technology Initiative: EPA's Region 9 (R9) will help bring new clean air and energy technologies to market. R9 will continue to serve as an active partner in the Clean Air Technology Initiative; along with the California Air Resources Board; the California Energy Commission; and several other local, state, and federal agencies to help bring to market new clean air and energy technologies. This partnership will use innovative solutions and non-traditional forms of funding to test and demonstrate technologies with the potential to result in major emission reductions in California and beyond. <ul style="list-style-type: none"> ○ EPA will support grants on low-emission goods movement and non-road technologies that will bring, once fully adopted, significant emission reductions. ○ R9 will also support a Technology Symposium and Funders Forum to identify ways to deploy the necessary technologies and resources to meet EPA's air quality health goals. ○ R9 will fund four to five early-stage, advanced technology demonstration projects. Through a competitive request for proposal in the San Joaquin Valley, two to three of these funded projects may include the initial testing of alternative-fueled or electric-powered technologies, such as on-road and non-road trucks and construction equipment, as well as a biogas waste-to-energy project. 	<p style="text-align: center;">✓</p> <p>In FY 2013, EPA's Region 9 funded several partnership initiatives in California including: replacement of over 60 old diesel delivery trucks and school buses with zero emission battery electric vehicles; the initial testing of zero-emission battery electric and hybrid electric/natural gas trucks that operate around the ports of Los Angeles and Long Beach; advanced technology demonstration projects in the San Joaquin Valley including: battery electric, hybrid electric/natural gas and hybrid electric/diesel trucks and several projects to convert methane to a transportation fuel at landfills, food waste processing facilities, and dairies.</p>

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<ul style="list-style-type: none"> Next Generation Air Monitoring (NGAM) Workshop: Region 6 and ORD will conduct an innovative workshop in November 2012 on Next Generation Air Monitoring (NGAM). The workshop will foster interaction between EPA's regions, ORD, the Office of Air and Radiation, and the Office of Enforcement and Compliance Assurance. The EPA entities will discuss ways to work together to bring promising air monitoring technologies and methods to fruition in the most efficient manner. The goal of the NGAM workshop is to collaboratively inform and stimulate concepts in low-cost, highly-portable sensors for use by citizens, community groups, schools, researchers, government agencies, and industries. 	<p style="text-align: center;">✓</p> <p>The workshop was held in November 2012.</p>
Communicate Widely and Openly	
<p>3. Make our science accessible, understandable, relevant to, and useful for the Agency, stakeholders, and general public. For our science to have an impact, EPA will widely communicate the work we do (Supports Principle 3).</p>	
<ul style="list-style-type: none"> Decision Support Tools: Ensure the most up-to-date methods, models, tools, and databases are publicly available on EPA's website. In FY 2013, models, methods, tools and databases will be reviewed for their relevance to EPA's research efforts and posted to a reorganized web page. This reorganization will allow for the most high-profile decision support tools to be organized and displayed in a way that will be most useful to the user community. Also, in FY 2013, communication strategies will be developed for new tools like EnviroAtlas and the Stormwater Calculator as they come online. Included in the communication strategies will be measures to assess the effectiveness of the outreach. 	<p style="text-align: center;">✓</p> <p>ORD models, methods, tools, and databases were reviewed for relevance to EPA research efforts and posted in January 2013 at http://www.epa.gov/research/mmttd/.</p> <p>Communication strategies for new tools like EnviroAtlas and the Stormwater Calculator were also developed.</p>